

Remarks

In the Official Action dated February 6, 2003, Examiner objected to the drawings as the reference character 15 was used to designate both a "torch holder" and "clamping jaws." Also, figures 3 and 4 used reference characters "A" and "B" to designate welding layers and torch movement. Examiner also required a properly worded Abstract of the Disclosure.

With respect to the claims, informalities were identified in paragraph 5 of the Official Action. Paragraph 7 rejected the claims 1-9 under 35 U.S.C. 112, second paragraph, as indefinite. Specific reference was made to claim 1 as lacking distinct chronological steps. Several claims had phrases that lacked antecedent basis, and use of the phrase "such as..." was considered indefinite.

With respect to the art, the apparatus claims 7-9 were rejected under 35 U.S.C. 102(b) as being anticipated by Kazlauskas (U.S. 4,373,125). Examiner stated that Kazlauskas discloses an apparatus provided with a guide means for welding pipes with slightly beveled ends (outwardly diverging walls) to be joined, in which the apparatus includes first and second carriages (108, 110), which are driven by motor means, and extend approximately 180 degrees, or along half the periphery of the circular pipe in a (selectively) downward direction, with each of the carriages supporting a pair of spaced apart welding heads, or torches, which are moveable in the longitudinal direction of the weld groove (abstract; column 1, lines 5-10; column 2, lines 7-28; column 7, lines 30-68; column 8, lines 1-68; column 9, lines 1-2; and figures 1, 3, and 13-16). Examiner further says that each of the welding heads (A, B, C, D) includes a housing 150 having a motor structure 160 (with a motor shaft pin driver 164) to move the welding electrode 46 closer

and further away from the structure to be welded, in addition to means to oscillate the welding electrode transversely across the welding groove (column 9, lines 42-68; column 10, lines 1-68; column 11, lines 1-59; and figures 1, 3-5, and 17).

With respect to the method claims 1-6, Examiner rejects claims 1, 2, 5, and 6 as being unpatentable under 35 U.S.C. 103(a) considering Kazlauskas in view of JP 55-84276.

Examiner finds that "Kazlauskas discloses the elements of claim 7 above. Kazlauskas does not specifically disclose a process for which two welding layers are laid in one welding pass. However, JP 55-84276 discloses an apparatus for welding pipeline girth joints, in which two pairs of welding torches 1, 2 (in which the preceding electrode is being weaved/oscillated to improve penetration and bead shape) are used to successively accumulate two welding layers 5, 6 such that the second bead is advantageous for smoothing the surface and keeping the accumulation of layers free from defects, while decreasing the cooling rate of the weld zone (abstract; and Figures 1 and 2). It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the pipe welding apparatus of Kazlauskas, by adding the successive accumulation of two welding layers, as taught by JP 55-84276, in order to smooth the surface and keep the accumulation of layers free from defects, while decreasing the cooling rate of the weld zone (JP 55-84276; abstract)."

Claims 3 and 4 were rejected under 35 U.S.C. 103(a) given Kazlauskas in view of JP 55-84276 as applied above and further in view of Friedman et al (U.S. 4,019,016). In rejecting these two method claims, Examiner states that "Kazlauskas (in view of JP 55-84276) disclose and/or suggest the elements of claim 1 above. Neither Kazlauskas

nor JP 55-84276 specifically discloses the variation of frequency and/or amplitude of the torch oscillations. However, Freidman et al. disclose welding control systems for an electric arc welding system, in which the programming circuits cause the torch to move back and forth across the weld path, in which both frequency and amplitude are controlled appropriately, such that a high quality weld is obtained (abstract; column 1, lines 54-64; column 3, lines 34-42 and 63-68; column 4, lines 1-23; column 9, lines 9-31; column 12, lines 40-68; column 13, lines 1-39; column 14, lines 1-6; and Figures 1-10). It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the pipe welding apparatus of Kazlauskas, by adding the successive accumulation of two welding layers, as taught by JP 55-84276, and by further adding the control of frequency and amplitude of the torch, as disclosed by Friedman et al., in order to obtain a high quality weld (Freidman et al.; column 3, lines 34-42 and 63-68; and column 4, lines 1-23)."

With respect to Examiner's objection to the drawings, applicant submits herewith corrected sheets 3 and 4 in light of those objections with the changes marked in red. An Abstract on a separate sheet is also provided avoiding legal terms. With the respect to the formal objections to the claims, the main claim 1 was amended to recite positive, active, and chronological method steps. The other formal objections were taken into account in the newly presented claims 10-15 and the amended claims 7-9.

Addressing the art at this point and particularly the reference Kazlauskas as it is a key reference in all of the rejections, applicant submits the following. Claims 7-9 were rejected as anticipated by Kazlauskas. In that patent, two carriers 108, 110 are shown wherein each carrier supports two welding torches. The welding torches are attached to

the carrier with a 45-degree arc between them. A quarter of the welding groove is provided with a welding layer by each welding torch. In Kazlauskas, the welding layers are not laid on top of each other, nor would it be obvious to do so given the mounting to the torches. In applicant's invention, two welding torches mounted side by side on one carrier such that it results in two welding layers being laid on top of each other in one welding pass. As a result, the welding tie required vis-à-vis Kazlauskas is shortened. To more clearly define applicant's invention, claim 7 has been amended to include the limitation that the two welding torches lie side by side in the longitudinal direction of the weld groove. Applicant submits that Kazlauskas neither anticipates nor makes obvious amended claims 7-9.

With respect to the rejection of claims 1, 2, 5, and 6 under 35 U.S.C. 103(a) as obvious given Kazlauskas and JP 55-84276, applicant would like to present the following. Kazlauskas discloses a method where multiple welding torches are used. Each welding torch is moved over a quarter of the outer circumference of the pies, and only one welding layer is laid in one welding pass. Therefore, the difference between Kazlauskas and claim 1 (now claim 10) is that Kazlauskas does not disclose a process for which two welding layers are laid in one welding pass. JP 55-84276 discloses a welding apparatus in which two pairs of electrodes are used. The preceding electrode is a consumable electrode 1, whereas the electrode 2 is a non-consumable electrode. Electrode 1 lays a weld bead 5. The electrode 2 slightly melts the upper part of the bead 5 to smoothen the surface, so the shape of the bead is flat as indicated with reference number 6 in the figures 2 and 3b. Hence, JP 55-84276 discloses one welding torch 1 with which a welding layer is laid in one welding pass. The welding torch 1 is

accompanied by a non-consumable electrode 2 as heat source for melting the welding layer. Non-consumable electrode 2 does not form a second welding torch for laying a second welding layer in the same welding pass as the first welding torch 1, in a sense of applicant's invention. Therefore JP 55-84276 does not specifically disclose a process for which two welding layers are laid in one welding pass. It is not obvious given Kazlauskas and JP 55-84276 how two welding layers are applied at one welding pass due to the structural and functional differences of the references. Applicant submits that these two references as applied do not render claims 10-15 obvious even when combined.

In light of the above, applicant submits that claims 7 through 15 are now in condition for allowance. Reconsideration of the rejection of the claims is requested and early allowance of the presented claims is solicited.

Respectfully submitted,



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